



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,847	09/12/2003	Charles Edward Boardman	24-AT-135243	8534

7590 Patrick W. Rasche Armstrong Teasdale LLP Suite 2600 One Metropolitan Square St. Louis, MO 63102	11/19/2007
---	------------

EXAMINER GREENE, DANIEL LAWSON	
-----------------------------------	--

ART UNIT 3694	PAPER NUMBER
------------------	--------------

MAIL DATE 11/19/2007	DELIVERY MODE PAPER
-------------------------	------------------------

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/661,847

Applicant(s)

BOARDMAN ET AL.

Examiner

Daniel L. Greene Jr.

Art Unit

3694

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2006 and 27 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-8, 10, 11, 13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10, 11, 13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/27/2006 has been entered.
2. Applicant's petition for withdrawal of holding of abandonment has been granted as per communications from the Office of Petitions dated 9/4/2007. Accordingly the previous Office action, i.e. the holding of abandonment is withdrawn and an action on the merits of claims 1-4, 6-8, 10-11, 13 and 15-20 follows.

### ***Response to Amendments and Arguments***

3. Applicant's arguments filed 10/27/2006 have been fully considered. Some are persuasive and some are not as expounded upon below.
4. The Submission of new Figures 4 and 5 obviates the objection set forth in section 1 of the previous Office action mailed 4/27/2006 because, for example, reference 164 has been eliminated. However the submission of new Figure 8 has not overcome the Examiners contentions as expounded upon below.

5. The deletion of the limitation "at least" from claims 1 and 13 has obviated the objection set forth in section 4 AND the rejection set forth in section 7.a. of the previous Office Action. Accordingly said objection and rejection is withdrawn.
6. The cancellation of claim 5 has obviated the rejections set forth in sections 5 and 7.b. of said previous Office action. Accordingly said rejections are withdrawn.
7. The amendment to claim 4 has obviated the rejection set forth in section 7.c. of the previous Office action. Accordingly said rejection is withdrawn.
8. Applicant's arguments with respect to sections 8-10 have been considered but are moot in view of the new ground(s) of rejection. The Examiner hereby withdraws said rejections in order to more clearly define how the prior art reads on applicant's inventive concept as set forth in the new grounds of rejection below.

### ***Drawings***

9. **The drawings are objected to under 37 CFR 1.83(a) for the following reason(s) as well as those reasons set forth in section 2 of the previous Office action mailed 4/27/2006 as well as sections 5a AND 5b of the Office action mailed 9/1/2005.**
  - a. Figure 8 submitted 10/27/2006 is new matter and WILL NOT be entered.
  - b. Further, any SPEC changes regarding Figure 8 are also considered new matter and will not be entered. (See Applicant's response received 10/27/2006)
  - c. Applicant should review the previous objections made by the Examiner as they are still pertinent to the issue at hand. To paraphrase, "Figure 8 was added

with Applicant's 2/1/2006 amendment, which introduced the new matter. Again the specification itself as originally filed specifically stated that the mating grooves or protrusions were NOT SHOWN. Applicant cannot properly add information that was not originally within the disclosure as filed. There is no support in the application **as originally filed** for figure 8 to indicate what it does. There is no basis for showing the entire beam 150 within groove 122, the depth of groove 122, the spacing between beam 150 and support plate 100, etc."

d. Regardless of applicant's statement that Figure 8 is a schematic illustration of Figure 4, there is NO SUPPORT IN THE APPLICATION AS FILED for figure 8 to show what it does including exactly where in Figure 4 the "schematic" is allegedly illustrating, proportions, etc. Resort may be had to case law to show that new figure 8 clearly imparts relationships that can not be disregarded and as such presents the situation of new matter.

"While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims." See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

e. Because the protrusions where NOT shown in the Application AS FILED, applicant cannot properly introduce new matter to "show them now". Applicant may only PROPERLY do this by, for example, filing a Continuation-in-part including the new subject matter that would only be attributed the filing date of the CIP, and NOT the parent, because, again, the exact shape, location,

orientation, etc. of the protrusions has not been disclosed in the application as filed.

f. Applicant further argues that the Figures of the application are not construction drawings meant to show exact sizes of the beams, support plates and grooves. (see page 9 second full paragraph) While applicant may not intend the drawings to be such 37 CFR 1.83(a) makes it very clear that

"The drawing in a nonprovisional application must show every feature of the invention specified in the claims."

g. Applicant has not complied with 37 CFR 1.83(a) because, for example, the drawings fail to show the feature of how the removable support plates "engage" the support beams and what constitutes a "portion of said beam".

h. It is imperative that Applicant comply with 37 CFR 1.83(a) because, for example, without a drawing to show exactly what does or does not connote a "protrusion" or how and in what manner the portion of the beam is positioned in the groove, there is no way to determine whether the protrusions and grooves of Anthony read on applicant's claimed invention:

### ***Specification***

10. The amendments filed 10/27/2006, 2/1/2006 and 11/16/2004 are objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure

of the invention. The added material which is not supported by the original disclosure is as follows:

- a. The addition of Figure 8 and ALL text directed thereto, see page 2 of the response received 2/1/2006.
- b. The removal of the original specification language "protrusions (not shown) from paragraph [0026] in the response received 11/16/2004.

Applicant is required to cancel the new matter in the reply to this Office Action.

**The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

***Claim Rejections - 35 USC § 103***

**11. Claims 1-4, 6, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anthony (U.S. 4,127,445) in view of either Bettinger (U.S. 3,811,237) or Naka et al. (U.S. 4,922,670).**

a. **Regarding claims 1 and 13, Anthony sets forth a nuclear reactor core support apparatus for supporting fuel assemblies in a reactor pressure vessel (12) including a core, said apparatus comprising:**

a reactor core shroud (20);

a plurality of support beams (19 and 21) coupled to said reactor core shroud (Figure 1); and

a plurality of removable support plates (54) disposed on said plurality of support beams, each said removable support plate comprising a top surface and an opposing bottom surface,

Anthony does not appear to expressly disclose;

that there is at least one groove in said bottom surface,

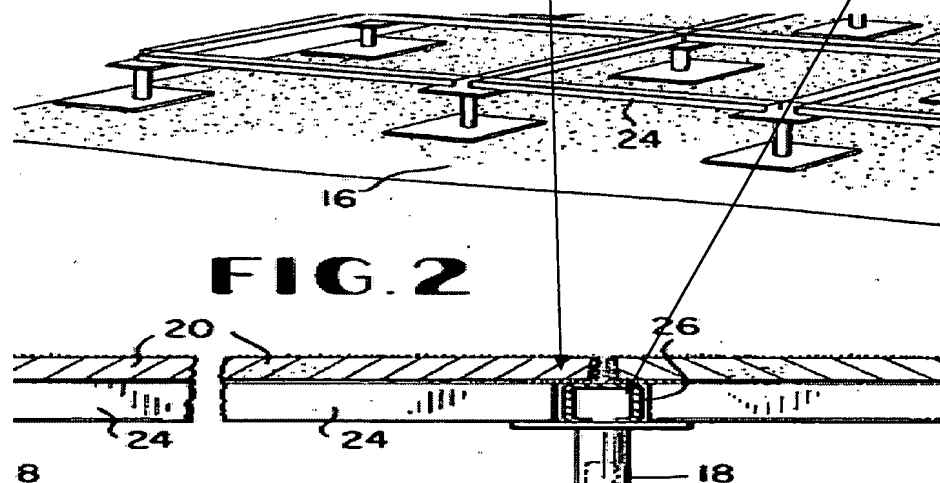
each said groove is sized to engage one of said support beams where a portion of said beam is positioned in said groove and

said removable support plate is in direct contact with said beam.

b. Bettinger discloses an apparatus comprising:

a plurality of support beams (Figure 1, item (26)); and

a plurality of support plates (20) disposed on said plurality of support beams (26), each said removable support plate comprising a top surface and an opposing bottom surface and at least one groove in said bottom surface, each said groove sized to engage one of said support beams where a portion of said beam is positioned in said groove.





Bettinger is synonymous art because it deals with a supporting structure, that is a structure designed to support other things.

Further, notice should be had to the similarities of Figures 1 and 10. The similarities of import are that they are functional equivalents. That is, both structures support the floor in different manners, yet the floor is still supported. It appears that applicant is of the opinion that Anthony is supported by support posts and pins not grooves and beams. Bettinger is considered evidence that both manners of support are obvious variants providing the same end result.

c. Naka et al. discloses an apparatus comprising a plurality of support beams (13) and a plurality of support plates (14) comprising a top surface and an opposing bottom surface and at least one groove (14f) in said bottom surface sized to engage one of said support beams wherein at least a portion of said beam is positioned in said groove in, for example, Figures 3, 4, 6, 10, 11, 13, column 2 lines 49+, and column 6 lines 1-10. Naka et al. teaches that the groove engages with the panel-retaining member of the stringer for the benefits of increased rigidity, resistance to earthquakes and resistance to deformation under load. Although Naka et al. is concerned with raised floors, applicant is claiming an apparatus that does not necessarily have to be used in a nuclear reactor to support nuclear fuel assemblies and Naka et al. discloses a supporting structure inherently capable of Applicant's intended uses. Note, it is not a matter of

whether one would WANT to utilize the invention in the same manner as applicant, it is a matter of whether or not the CAPABILITY is present.

d. At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of either Bettinger or Naka et al. into the design of each of Anthony's separate support blocks such that the bottom surface incorporates at least one groove for aligning with the support beams and each said groove is sized to engage one of said support beams where a portion of said beam is positioned in said groove and said removable support plate is in direct contact with said beam for the benefits of securing/aligning said support plates in agreement with the support beams as well as to increase the rigidity of the support plate matrix, as such is no more in the use of commonly known methods of joining/aligning/mating/engaging separate pieces already well known in the nuclear art, especially since applicant concedes that those skilled in the art already understand the use of protrusions and grooves and their inherent uses and benefits, in for example, the response received 2/1/2006, page 10, second and third paragraphs.

"Patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field." Verve LLC v. Crane Cams Inc, 65 USPQ2d 1051, 1053-1054 (Fed Cir. 2002).

e. Further, as evidenced by Bettinger figures 1 and 10, it is prima facie obvious that the two methods of securing support blocks with either pins and

posts or grooves and beams are functional equivalents and as such it would be obvious to utilize either manner to support a supporting structure.

So to be clear, the Examiner has modified Anthony by removing the pins and posts, i.e. items 62, 60, 23 and 22 and utilizing the teachings of equivalency in replacing them with a groove that runs around the entire circumference of support plate 54 as taught by either Bettinger Figures 1, 2, 3, 9 or Naka Figure 10, etc. Now the support plates of Anthony would actually sit down into the support beam structure in the same manner as applicants

**Regarding claim 2**, Anthony clearly discloses the limitation wherein said plurality of support plates and said plurality of support beams form a core support.

**Regarding claim 3** and the limitation further comprising a support ring having an inner periphery and an outer periphery, said support ring attached to said core shroud, said plurality of support beams extending between said inner periphery, said plurality of support beams intersecting one another to form a support beam matrix see, for example, Fig. 2, item 29.

**Regarding claim 4** and the limitation wherein each said removable support plate is removable from above said reactor core support apparatus, see for example, Col. 2 lines 5-21.

**Regarding claims 6 and 15** and the limitation wherein each said removable support plate comprising at least one support plate flow passage, see for example, Figure 4.

**12. Claims 1-4, 6, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (U.S. 4,086,133) in view of either Bettinger (U.S. 3,811,237) or Naka et al. (U.S. 4,922,670).**

**a. Regarding claims 1 and 13,** Anderson sets forth a nuclear reactor core support apparatus for supporting fuel assemblies in a reactor pressure vessel (12) including a core, said apparatus comprising:

a reactor core shroud (13);

a plurality of support beams (52) coupled to said reactor core shroud (Figure 1, wherein it is understood that shroud 13 extends all the way around the entire core. Note how the support beams are coupled to the shroud at the bottom of the figure); and

a plurality of removable support plates (41) disposed on said plurality of support beams, each said removable support plate comprising a top surface and an opposing bottom surface,

Anderson further discloses that there is at least one groove in said bottom surface, each said groove is sized to engage one of said support beams where a portion of said beam is positioned in said groove and said removable support plate is in direct contact with said beam in figure 1 wherein it is understood that the groove is the hole the beam 52 is partially inserted into.

**b. Bettinger discloses an apparatus comprising:**

a plurality of support beams (Figure 1, item (26)); and

a plurality of support plates (20) disposed on said plurality of support beams (26), each said removable support plate comprising a top surface and an opposing bottom surface and at least one groove in said bottom surface, each said groove sized to engage one of said support beams where a portion of said beam is positioned in said groove.

Bettinger is synonymous art because it deals with a supporting structure, that is a structure designed to support other things.

Further, notice should be had to the similarities of Figures 1 and 10. The similarities of import are that they are functional equivalents. That is, both structures support the floor in different manners, yet the floor is still supported. It appears that applicant is of the opinion that Anthony is supported by support posts and pins not grooves and beams. Bettinger is considered evidence that both manners of support are obvious variants providing the same end result.

c. Naka et al. discloses an apparatus comprising a plurality of support beams (13) and a plurality of support plates (14) comprising a top surface and an opposing bottom surface and at least one groove (14f) in said bottom surface sized to engage one of said support beams wherein at least a portion of said beam is positioned in said groove in, for example, Figures 3, 4, 6, 10, 11, 13, column 2 lines 49+, and column 6 lines 1-10. Naka et al. teaches that the groove engages with the panel-retaining member of the stringer for the benefits of increased rigidity, resistance to earthquakes and resistance to deformation under load. Although Naka et al. is concerned with raised floors, applicant is claiming

an apparatus that does not necessarily have to be used in a nuclear reactor to support nuclear fuel assemblies and Naka et al. discloses a supporting structure inherently capable of Applicant's intended uses. Note, it is not a matter of whether one would WANT to utilize the invention in the same manner as applicant, it is a matter of whether or not the CAPABILITY is present.

d. At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of either Bettinger or Naka et al. into the design of Anderson's and to modify Anderson to include a beam matrix and matching grooves within the separate support blocks such that the bottom surface incorporates at least one groove for aligning with the support beams and each said groove is sized to engage one of said support beams where a portion of said beam is positioned in said groove and said removable support plate is in direct contact with said beam for the benefits of securing/aligning said support plates in agreement with the support beams as well as to increase the rigidity of the support plate matrix, as such is no more in the use of commonly known methods of joining/aligning/mating/engaging separate pieces already well known in the nuclear art, especially since applicant concedes that those skilled in the art already understand the use of protrusions and grooves and their inherent uses and benefits, in for example, the response received 2/1/2006, page 10, second and third paragraphs.

"Patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be written as a comprehensive

tutorial and treatise for the generalist, instead of a concise statement for persons in the field." Verve LLC v. Crane Cams Inc, 65 USPQ2d 1051, 1053-1054 (Fed Cir. 2002).

e. Further, as evidenced by Bettinger figures 1 and 10, it is prima facie obvious that the two methods of securing support blocks with either pins and posts or grooves and beams are functional equivalents and as such it would be obvious to utilize either manner to support a supporting structure.

So to be clear, the Examiner has modified Anderson by removing the posts 52 and replacing them with the beam support structure of the secondary references and further utilizing the teachings of equivalency in replacing the support system of Andersons post and hole with a beam system and a groove that runs around the entire circumference of support plate 41 as taught by either Bettinger Figures 1, 2, 3, 9 or Naka Figure 10, etc. With these modifications the support plates of Anderson would actually sit down onto a support beam structure in the same manner as applicants

**Regarding claim 2**, Anderson as modified clearly discloses the limitation wherein said plurality of support plates and said plurality of support beams form a core support.

**Regarding claim 3** and the limitation further comprising a support ring having an inner periphery and an outer periphery, said support ring attached to said core shroud, said plurality of support beams extending between said inner periphery, said plurality of support beams intersecting one another to form a support beam matrix see, for example, Anderson Figure 1 wherein the core

support is indeed attached to the core shroud as such the beams of Bettinger and Naka et al. would also attach to said core shroud for the purpose of structural reinforcement.

**Regarding claim 4** and the limitation wherein each said removable support plate is removable from above said reactor core support apparatus, see for example, Col. 4 lines 19-49.

**Regarding claims 6 and 15** and the limitation wherein each said removable support plate comprising at least one support plate flow passage, see for example, Figure 1 and col. 4, lines 10-18.

**13. Claims 1-4, 6-8, 10, 11, 13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,813,327 to Challberg in view of U.S. Patent 3,650,895 to Sodergard and further in view of U.S. Patent 4,922,670 to Naka et al. for the reasons set forth in section 11 of the previous Office action as further expounded upon below.**

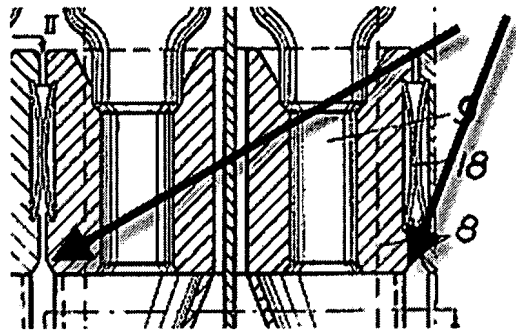
Applicant's arguments are unpersuasive as applicant has not shown that the references do not teach what the examiner has stated they teach, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid.

Again, Challberg sets forth the supporting structure in an integral form. Case law and Sodergard were applied to show obviousness in breaking the support structure into smaller parts performing the same function. Naka et al



shows it is old and well known for supporting structures to use beams and grooves.

Further, Sodergard does indeed disclose a groove on the bottom as shown here



Applicant's arguments that Naka is nonanalogous art are untenable. Naka et al. is indeed analogous art because it deals with structural supports and supporting structures. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Naka et al. is reasonably pertinent to the particular problem with which applicant was concerned, i.e. the ability to remove only one piece of a previously solid structure in order to gain access there below. By making the previous core support structure into smaller pieces allows easier access to components below said support structure without having to remove the entire support structure. This is

synonymous with putting a man hole cover on the sewers so you don't have to dig up the entire street to gain access to the pipes.

**14. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,813,327 to Challberg in view of U.S. Patent 3,650,895 to Sodergard and further in view of U.S. Patent 4,922,670 to Naka et al. as applied to claims 1-4, 6-8, 10, 11, 13 and 15-18 above and further in view of U.S. Patent 5,519,746 to Dalke et al. for the reasons set forth in section 12 of the previous Office action as further explained in section 13 above.**

Applicant proffered no argument about what Dalke teaches with regard to dependent claims 19 and 20. Merely that the base references failed to disclose all the limitations of the independent claims 1 and 13.

### ***Conclusion***

15. Examiner's Note: The Examiner has cited particular columns and line numbers in the references as applied to the claims for the convenience of the applicant.

Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel L. Greene Jr. whose telephone number is (571) 272-6876. The examiner can normally be reached on Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James P. Trammell can be reached on (571) 272-6712. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DIG  
2007-11-08

  
JAMES P. TRAMMELL  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600